Unifying Kohlberg with Information Integration: The Moral Algebra of Recompense and of Kohlbergian Moral Informers

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In order to unify two major theories of moral judgment, a novel task is employed which combines elements of Kohlberg´s stage theory and of the theory of information integration. In contrast to the format of Kohlberg´s moral judgment interview, a nonverbal and quantitative response which makes low demands on verbal facility was used . Moral informers differing in value, i.e. high and low, are presented. The differences in effect of those two pieces of information should be substantial for a person at that specific moral stage, but small for a person at a different stage. Hence, these differences may diagnose the person's moral stage in the simplest possible way as the two levels of each of the thoughts were about typical content of the four Kohlbergian preconventional and conventional stages. The novel task allowed additionally to measure the influence of another moral concept which was about the non-Kohlbergian moral concept of recompense. After a training phase, pairs of those thoughts were presented to allow for the study of integration and individual differences. German and Korean children, 8, 10, and 12 years in age, judged deserved punishment. The patterns of means, correlations and factor loadings showed that elements of both theories can be unified, but produced unexpected results also. Additive integration of each of the two pairs of moral informers appeared, either with two Kohlbergian moral informers or with another Kohlbergian moral informer in combination with information about recompense. Also cultural independence as well as dependence, developmental changes between 8 and 10 years, and an outstanding moral impact of recompense in size and distinctiveness were observed.

This paper seeks to contribute to a unified approach to moral judgment that includes both Kohlberg´s stage theory (Kohlberg, 1969) and the theory of information integration (Anderson, 2008) by utilizing the moral categories developed in extensive work by Kohlberg and others while avoiding limitations of Kohlberg´s approach.

Currently, Kohlberg´s stage theory assumes five stages in moral development (Colby, Kohlberg et al., 1987) ranging from the morality of obedience through the morality of law and duty to post-conventional morality. While this is a well known theory, limitations of validity remain (Modgil & Modgil, 1986). Rest et al. (1999) mention twelve criticisms in the literature being in their view warranted and five being in their view unwarranted. Gibb´s two-phase model (Gibbs, 2003; Gibbs et al., 2007) cancelled even the fifth stage and used only the first four of Kohlberg´s six stages which were the original two preconventional and two conventional stages.

One well-known fundamental limitation taken up here is that the Kohlbergian approach depends critically on verbal facility and has been extensively criticized on this ground (Rest et al., 1999, chapter 2). As Rest (1986, p. 482) noted "production measures require verbal expressiveness in order for the subject to be credited with a cognitive structure." A corollary of this objection is that Kohlberg's approach to moral judgments is not concerned with moral judgments below the age of 12 years. This limitation is even true for a recognition task like that of Rest´s Defining Issues Test DIT (e.g. Rest, 1975) which only asks for ratings and rankings of moral content, but needs a reading level of 12 years (Rest et al., 1999). Thus, Kohlberg´s developmental stages may miss a central aspect of moral development, as much moral development takes place at preschool and elementary school ages.

Another limitation is that the interview approach misses to study directly the integration of the diverging multiple determinants contained in the dilemmas. The importance of integrating multiple determinants was recognized when fairness was equated with "balancing or weighing of conflicting claims" (Colby, Kohlberg et al., 1983, p. 7). In this context three problems arise. First, although moral judgments depend on multiple determinants, the study of their use is, however, restricted to a specific patterns of diverging information which form the special cases of moral conflicts. Second, although Colby, Kohlberg et al. (1987, p. 2) assume that moral concepts are not „used independently of one another but rather are bound together by common structural features" and their focus is "on the relations among ideas in the individual´s thinking" they did not study the integration of the typical contents of their stages. Also, Rest´s (1983) claim that the main contribution of stage theories is to `integrating the various considerations` (p. 561) and to provide frameworks `for prioritizing and integrating considerations` (p. 563) was stated without explicit studies and without any methodological outline how that could be done. Third, the hermeneutical procedure and the theoretical basis of sociomoral

perspectives include no theory about balancing or weighing of conflicting claims and of other important moral concepts. Therefore, one may consider those theories incapable to handle the integration problem (Anderson, 1991; 1996, p. 206).

The theory of integration information offers a frame for studying the integration problem. This theory has roots in moral philosophy, e.g. Aristotle, Bentham, J. S. Mill. As previous empirical work has found (e.g. Anderson, 1996) moral judgment frequently depends on the integration of more than one piece of information which followed frequently simple rules often according to algebraic expressions. Even with young children integration of moral information has been shown to have psychological reality. For example, even 5-year-olds could integrate need and merit (Anderson & Butzin, 1978). Also, preschoolers could integrate intent and consequence information in contrast to results with the Piagetian choice response task followed by an interview (Leon, 1980, 1982, 1984; Surber, 1982). Thus, studies based on the theory and on the methods of moral algebra may be able to ameliorate the limitations mentioned before by employing experimental stimulus design and quantitative responses in contrast to the stimulus conflicts in moral dilemmas and choice responses as in the interview approach.

To unify both approaches, a novel task is designed which makes low demands on verbal facility in contrast to the format of Kohlberg´s moral judgment interview. At the same time, the novel task still employs elements of both approaches as Kohlberg´s well-known dilemma of Heinz and his sick wife is given as a cover story and the contents of the four stages are combined with the methods used in moral algebra. For example, when committing burglary in a drugstore in order to get a drug he could not pay for Heinz thinks about the risk to be caught when breaking into the drugstore, this offers a moral content closely related to Kohlberg's first stage. Other Kohlbergian moral informers present content about the wife´s approval and about the societal long-term consequences of the act. A non-Kohlbergian moral informer about Heinz´ thoughts referring to his intent of recompense is also used as recompense, although not mentioned in Kohlberg´s stages, has been previously shown to be a major moral determinant (Hommers & Anderson, 1985, 1991). Those moral informers are varied and combined systematically in order to study the integration of multiple determinants in moral judgment as assessed by a nonverbal rating response. The subjects rate how much punishment Heinz deserves after they heard about his thoughts when acting.

One purpose of the present approach is to study how sensitive young children are to differing levels of a given moral stage (moral informers of

high and low value). If they are sensitive to those different levels, the question of integration arises and can be examined by the methods of information integration theory.

A second purpose is concerned with the stage theory. The empirical question is how individual differences in sensitivity correlate across different stages levels. As the moral informers were presented in two levels (high and low) the differences in effect between these two pieces of information may be different for persons being in different stages. For example, a person at some specific stage A may be more sensitive to the stage-typical content of stage A because that content is more relevant for him than typical content of other stages which may be more relevant for a person in another stage and vice versa. Also persons being in one stage may even ignore typical content of other stages. Hence those differences in effect may diagnose the person's moral stage in the simplest way possible.

In particular, two hypotheses about the correlations can be derived from the basic assumption. First, Kohlberg´s stage sequence predicts that the individual differences of the levels of different Kohlbergian moral stage concepts should correlate negatively. When a subject is in one of two moral stages the informer of that stage factor should be important and its main effect will be large, whereas the informer of the other stage should not be important and its main effect will be small. (see also Colby et al., 1983; pp. 48 – 49, Figures 2 to 5).

Second, for moral concepts that are not contained in those of the Kohlbergian stages the difference of their high and low values should not correlate with effects from the Kohlbergian stages. This hypothesis is examined by using two levels of Intent of Recompense, i.e. Yes or No, as non-Kohlbergian moral informers.

Two further features of the study provide the necessary fit to other aspects of the Kohlbergian research. First, children are employed, since the development of morality is Kohlberg´s topic. However, children of younger ages than in Kohlberg´s approach participated in order to study a major period of moral development that is missed by the Moral Judgment Interview MJI. Second, cultural comparisons are performed in order to examine Kohlberg´s basic claim of the cultural universality of the moral development of the stages (Kohlberg, 1969; Colby, Kohlberg, Gibbs, & Lieberman, 1983).

METHOD

Task. First, Kohlberg´s well-known moral dilemma was presented: Heinz broke into a drug store and stole the drug after the druggist refused the drug to Heinz because Heinz could not pay for it. Following this fixed information the task differed from the original Kohlbergian procedure as variations of Heinz´ thoughts while stealing were presented.

Three thoughts were related to Kohlberg´s two preconventional and two conventional stages. One kind of thought is typical for stage 4 (social system and conscience), one other presents combinations of Kohlbergian information related to stage 1 (heteronomous morality), and a third one is related to stage 2 (individualism, instrumental purpose, and exchange) or to stage 3 (mutual interpersonal expectations, relationships, and interpersonal conformity) as characterized by Colby et al. (1987, p. 18).

One additional informer was about the non-Kohlbergian moral concept of recompense (i.e. giving awards to the harmed person). This concept has been shown to be a major moral concept in philosophy (Ross, 1930), in civil as well as in criminal law and in the history of law. Moreover, Hommers & Anderson (1985, 1989, 1991) found that recompense had a large effect on moral judgements, already in preschool children.

Two sets of stimuli were used. Set A presents (a) Kohlbergian information typical for stage 4 (social system and conscience) and (b) information on recompense. The stage-4 stimulus variable, Societal Risk, had two conditions: "If everybody acted like me, law and order would be at risk in the long run" versus "If everybody acted like me, law and order would not be at risk in the long run." The two conditions of the Intent of Recompense variable were: "I shall give compensation to the druggist by several anonymous money transfers later", and "As I am angry about the inhuman behavior of the druggist I am not motivated to give any compensation to the druggist later."

Set B presents Kohlbergian information related to stage 1 (heteronomous morality) and to stage 2 (individualism, instrumental purpose, and exchange) or to stage 3 (mutual interpersonal expectations, relationships, and interpersonal conformity). The stage-1 variable, Personal Risk, had the following two conditions: "The risk of being caught and severely punished is low" versus "The risk of being caught and severely punished is high." The variable Wife's Approval was a mixture of Kohlberg's stages 2 and 3: "My wife should be proud of my act" versus "My wife would not appreciate my breaking into the store."

Subjects. German and Korean children served as subjects in order to examine the effects of cultural background. Rest et al. (1986), e.g., found that Korean adolescents were ahead of adolescents in other cultures in Rest´s P-score measure of moral development based on Kohlbergian stage theory. Also cultural differences are of general interest for the stage theory because Kohlberg's claim is that the moral stages follow universally at an invariant sequence.

In total 393 (208 female) children participated, about half each German and Korean: 136 of the second grade (7.3 or 8.0 years old on average), 131 of the fourth grade (9.4 or 10.0 years old on average) as well as 126 of the sixth grade (11.5 or 12.0 years old on average). The Korean children were around half year older than the German children. Except minor differences the same results were found for German and Korean subjects.

Procedure. The bilingual second author translated the German phrases into Korean. A Korean teacher checked the translation. The subjects were tested in their native language by a native speaker. The data collection was done by the second author in Germany and South Korea. Support from the local schools and agreements of the parents were obtained. As the relative lengths or the placements of the crucial parts of the stimuli were different for some stimuli of part A and of part B in the German and in the Korean versions of the stimuli cross-cultural comparisons have to take that into account (see below).

When the subjects heard the Heinz dilemma, illustrations were provided. The subjects were informed about their task in the standard integration-theoretical manner (Anderson, 2008). In particular, they were introduced to the rating scale by giving an initial judgment on the Heinz dilemma only. Moreover, they were told to assume a criminal code with applicable imprisonment ranging in 13 levels from 0 to 12 months in order to anchor the rating scale. Then all of the eight levels of the stimulus variables were explained and the subjects rated those eight moral informers in this one-factorial presentation format. Finally, the 8 combinations of set A and set B were presented to allow for testing the integration rule. For example, a 2-factorial version of set A of the four 2x2 Societal Risk x Intent of Recompense stimulus was "Heinz thought: If everybody acted like me, law and order would be at risk in the long run. As I am angry about the inhuman behavior of the druggist, I am not motivated to give any compensation to the druggist later." In set B a combined version of the four 2x2 Personal Risk x Wife's Approval stimuli was for example: "Heinz thought: The risk of being caught and severely punished is low. My wife should be proud of my action."

Preliminary analyses. The means of the initial judgments for the German children were 4.7, 3.3, and 3.7 months and for the Korean children 4.6, 5.0, and 4.1 months, for second, fourth and sixth graders respectively.

There were no interactions of gender in the following results on the mean judgments. Also, the first punishment rating, where the subjects had only knowledge of the Heinz dilemma and did not know about the thoughts of Heinz, had only an overall, decreasing effect on amount of punishment. As covariance analyses showed, harsher subjects were simply in general harsher than lenient subjects, but had no different patterns in the results. As there were some interactions indicating that the two national groups differed, the results are presented by crossing the stimulus designs and the national groups in the sequence of Figure 1 and Figure 2. The standard error of the means shown in Figure 1 to Figure 2 varied between 0.34 months and 0.49 months.

One may note that this kind of work is not like the standard experiment where the main effect is in doubt. Instead, its concern is to reveal patterns of integration in moral judgment. Thus, it may suffice to say that all main effects of the following report were statistically significant at least at alpha=0.05 and often at alpha=0.001 except as otherwise indicated with the youngest children.

RESULTS

Integration of Societal Risk and Intent of Recompense. Two main results for the German children are shown in the solid curves of Figure 1. First, both variables, Societal Risk and Intent of Recompense, had substantial effects on judgments of deserved punishment. Second, the two variables were integrated in an additive manner.

The slope of each solid curve in Figure 1 represents the difference between the two levels of Societal Risk. Note that No-Risk was punished higher than Yes-Risk (see below). This difference was 0.8, 0.9, and 1.5 months for the three respective age groups. The Risk effect was somewhat greater for the older children although Risk x Age interaction did not approach significance.

The vertical distance between the two curves in each panel represents the effect of the Recompense variable. As expected, the subjects gave more punishment for the No-level of Recompense than for the Yes-level, that is, Heinz's intent to give recompense later on. This effect was 3.8, 2.5, 3.3 months for the three respective age groups. The Recompense effect was somewhat less for the two older age groups, and the corresponding Age x Recompense interaction was statistically significant, $F(2,187)=3.45$,

p=.034.

Comparison of slopes and vertical distances in Figure 1 shows that the effect of Recompense was 2 to 4 times larger than the effect of Societal Risk in each age group.
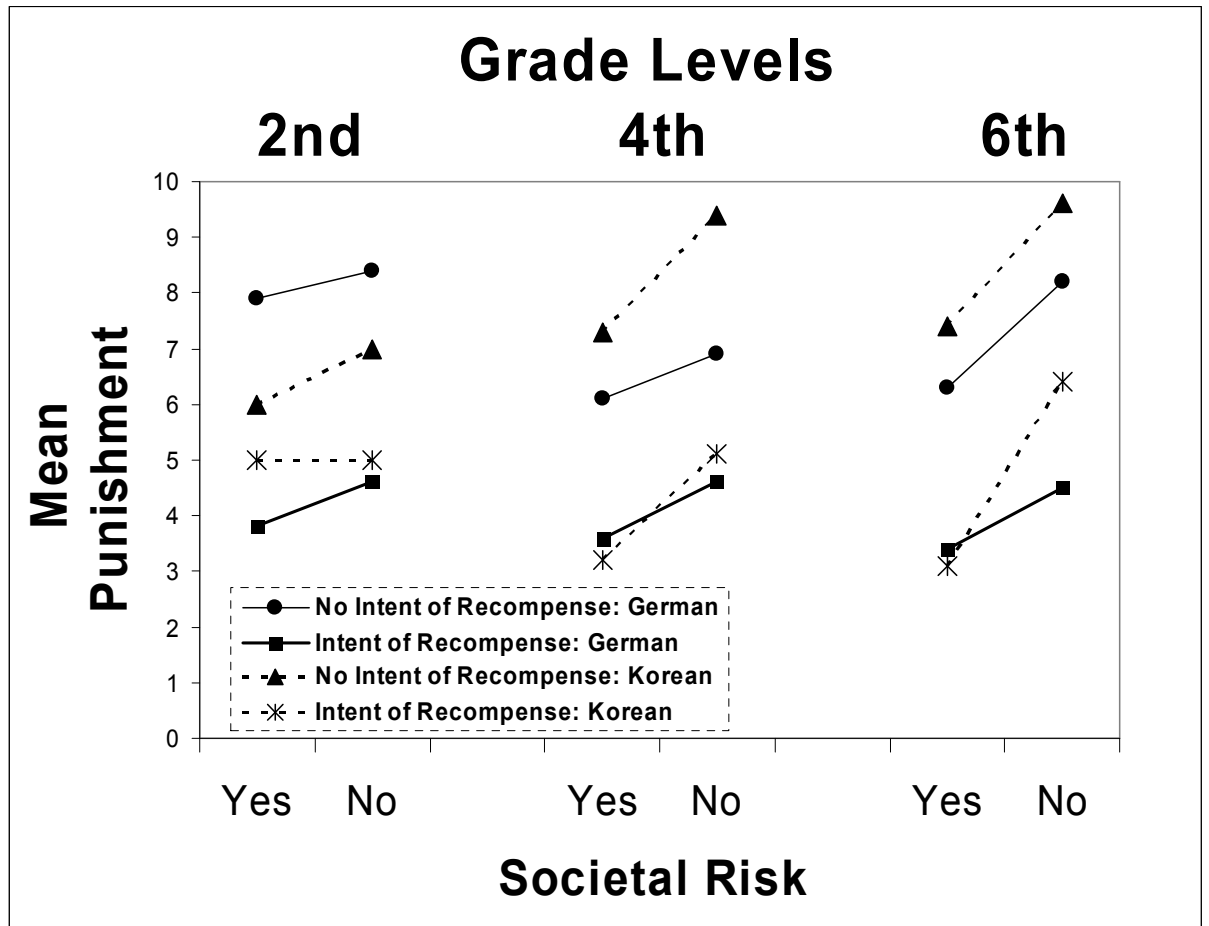

Figure 1. The mean punishments of six age groups of German and Korean children as a function of two levels of Societal Risk (horizontal axis) and of two levels of Intent of Recompense (curve parameters). Aside from the age x culture depending impacts of the varied stimulus conditions the three graphs show graphical support for an additive integration by their near parallelism.

The near-parallelism of each pair of curves for those three groups of children in Figure 1 implies an additive integration of the two moral informers. This sign of an additive moral algebra was supported by a nonsignificant Risk x Recompense interaction for each age group

separately.

In the broken curves of Figure 1 the two older Korean groups showed the same pattern as the German children, except for showing greater effects of both variables. The judgments of the Korean fourth and sixth graders were influenced by both types of information, as with the German children. The distances of the middle and the right graph indicate that the Korean fourth and sixth graders gave 4.4 or 3.8 months more punishment for the No-level of Recompense than for the Yes-level. The slopes indicate they gave 2.0 or 2.7 months more punishment for the No-level of Societal Risk than for the Yes-level as visible in the vertical distances between the pairs of curves. As with the German children, the effect of Recompense was greater than the effect of Risk, although to a lesser degree. Furthermore, the effect of Risk was larger for the Korean than for the German fourth and sixth graders. This contrast to the youngest group may have had a psycholinguistic cause. The information about Societal Risk in Korean sentences was nearly three times longer (36 for Risk to 13 symbols for Recompense) than that of Recompense. Thus, Societal Risk may be more salient for the Korean children of those older age groups.

The near parallelism of the pair of curves for the Korean fourth and sixth graders implies that an additive rule integrates the two moral informers. This interpretation was supported by the nonsignificance of the interaction for the fourth graders although that for the sixth graders was statistically significant. Visual inspection, however, indicates that this deviation is relatively small. Provisionally, therefore, the additive rule seems mainly correct.

The youngest Korean group was an exception in that the Societal Risk effect did not approach statistical significance ($p=.22$). This contrast to the youngest German group may also follow from the psycholinguistic cause but as a consequence of a different psychological process. The information about Societal Risk in Korean sentences was nearly three times longer than that of Recompense. Therefore, to keep the Societal Risk information in mind could be more difficult with Korean than with German sentences (15 words for Risk to 9 words for Recompense) for second graders. The youngest Korean group did, however, judge on the basis of Recompense ($F(1,64)=6.86; p=.01$).

Developmental trends were thus quite different for the two cultures. For Korean children Risk and Recompense both showed substantial and statistically significant increases with age. For German children, in contrast, the Recompense effect decreased with age, in agreement with previous results in western cultures (e.g. Hommers & Anderson, 1985), whereas their small increase in the Risk effect did not approach significance. This cultural difference in age trends reached statistical significance in the three-way

Recompense x Age x Culture interaction ($F(2,386)=13.15$; $p<.001$).

Integration of Wife's Approval and Personal Risk. A second integration task was studied in Set B of the experiment, namely, the integration of Heinz´ thoughts about Wife's Approval and Personal Risk. Briefly, both cultures showed quite similar judgments as shown in Figure 2 for German (solid curves) and Korean (broken curves) respectively.
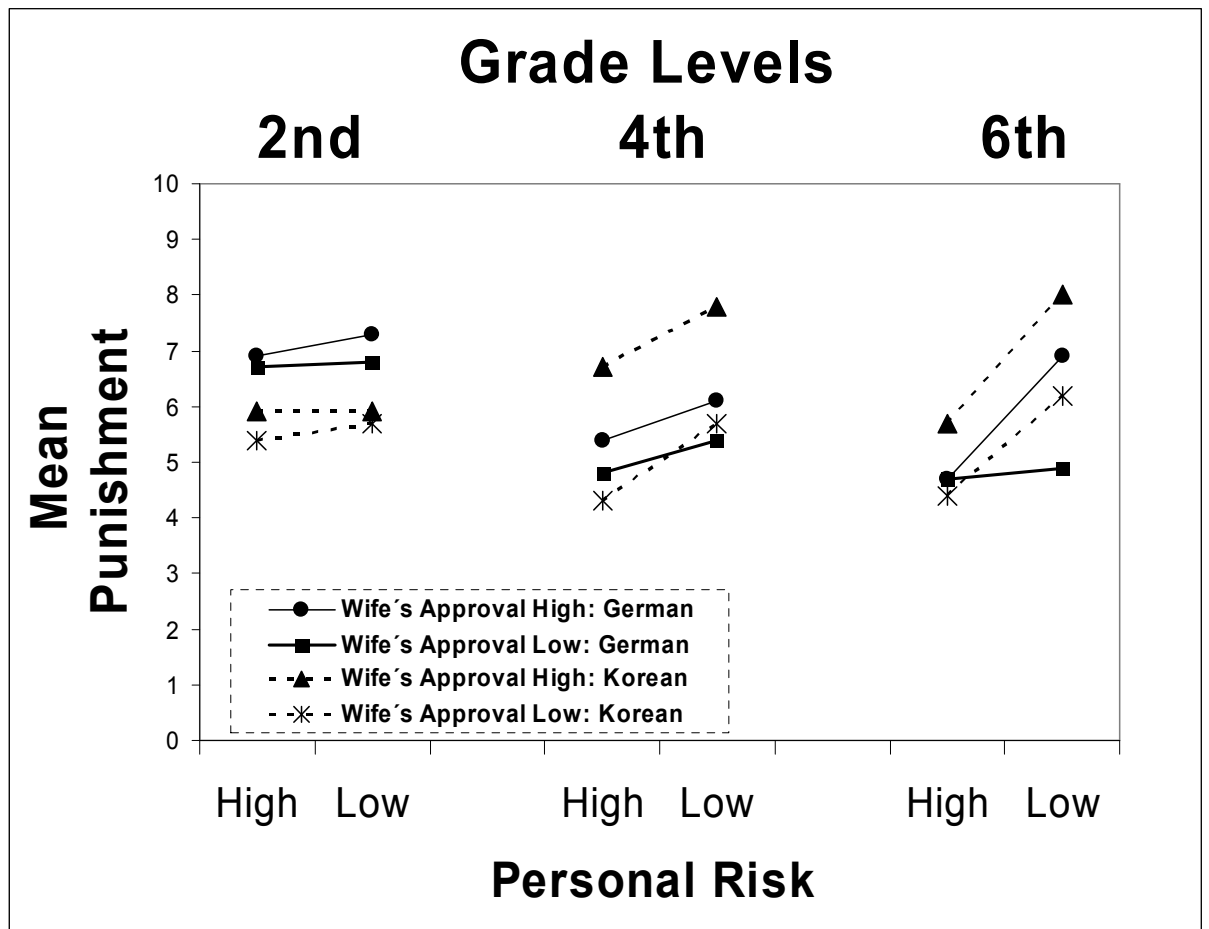

Figure 2. The mean punishments of six age groups of German and Korean children as a function of two levels of Personal Risk (horizontal axis) and of two levels of Wife´s Approval (curve parameters). Aside from the increase of impacts of the varied stimulus conditions between the two youngest groups the graphs of the fourth and sixth graders show some weak graphical support for an additive integration.

In both cultures, the two groups of second graders were virtually not affected by either informer. The curves for the second graders are nearly horizontal, indicating little effect of Personal Risk, and close to each other indicating little effect of Wife's Approval. In accord with this visual inspection, neither main effect was statistically significant for either group.

The graphs for the fourth and sixth graders do show substantial effects of both informers for both cultures. As visible in the vertical distances of the curves in the middle and right panels of Figure 2 the two older groups punished harsher in average when Heinz thought that his wife would approve his act than when thinking that she would not. Furthermore, they punished harsher in average when Heinz thought that his risk of being captured was low than when he thinks his risk is high, as can be seen from the slopes of the middle and right panel.

All main effects were comfortably statistically significant for the two older groups of both cultures. Furthermore, increases of the effects of the moral informers with age were statistically supported by the Personal Risk x Age interaction and the Wife's Approval x Age interaction (both $p<.01$).

Another cultural similarity was found in the two older groups of both nations. Despite visual deviations from parallelism support for the additive integration followed from the statistical analyses. Fourth graders showed higher effect of Wife's Approval with the high than with the low level of Personal Risk and sixth graders showed higher effect of Wife's Approval with the low than with the high level of Personal Risk. Despite substantial power only the interaction for the German sixth graders was significant at $p<.05$ ($p=.564$, and $p=.234$ for the Korean and $p=.107$, and $p=.047$ for the German F-tests). Therefore, as with the first integration task, an additive integration of these two moral informers seems to hold. However, this result needs further work as to the nature of those visual deviations from parallelism.

Training phase. Comparisons of the judgments about single thoughts with those on combined thoughts showed three further results.

First, the relatively great impact of Recompense information was already present in the training phase. In all of the 12 available comparisons of group means the Recompense effect was largest ($CHI^2=12.00$, $p<.001$) among the four moral informers. Thus, its relatively large effect with the combined stimuli could not be attributed to a mere recency effect.

Second, there was a general increase of the impact of Societal Risk with age. This confirms the corresponding developmental trend found with combined thought stimuli. One may note that the variation of the Societal Risk informer had the largest effect among the Kohlbergian informers for the sixth graders of both cultural groups.

Third, the mean differences in combined presentations were smaller than the mean differences in single presentations (with two exceptions among 24 comparisons, thus, CHI²=16.33, p<.001). Even the cross-over of single and combined presentation was found with Intent of Recompense and Societal Risk across all age and cultural groups. Those observations are in line with what is predicted by the averaging model of information integration. Another interpretation for that result is that it is more difficult to distinguish the levels of the moral informers in the integration task than in single presentation during the training phase.

Individual Differences. The study of individual differences is of general interest for the psychology of morality. Eight difference variables were calculated for the four kinds of information about Kohlbergian-type and Intent of Recompense thoughts. In the single presentation of the training phase, the punishment for the high level was subtracted by the punishment for the low level. In a similar manner for the combined presentation, the mean difference across the two levels of the other information was calculated for each kind of information.

Table 1: Correlations of the Individual Difference Variables

Informers and Presentations	Personal Risk Single	Wife´s Approval Single	Societal Risk Single	Personal Risk Combined	Wife´s Approval Combined	Societal Risk Combined	Intent of Recompense Single
Wife´s Approval Single	.38						
Societal Risk Single	.27	.27					
Personal Risk Combined	.30	.23	.25				
Wife´s Approval Combined	.30	.32	.26	.35			
Societal Risk Combined	.23	.13*	.29	.31	.21		
Intent of Recompense Single	.21	.26	.27	.22	.21	.15*	
Intent of Recompense Combined	.08*	.10*	.08*	.13*	.17*	.04*	.46

Note: * p (Bonferroni) > .02

The correlations between those eight difference variables are shown in Table 1 for the total group. The first hypothesis was the prediction from Kohlberg´s theory that the differences of the levels of the Kohlbergian moral informers should correlate negatively. In particular, when a subject is in one of two moral stages the informer of that stage factor should be

important and its main effect should be large, whereas the informer of the other stage should not be important and its main effect should be small. But, contrary to the Kohlbergian prediction of negative correlations, all 15 between-stage correlations were positive and substantial (i.e., $r = 0.29$ in average, ranging from $r=0.13$ to $r=0.38$, except one all those correlations were significant with $p<.001$), as shown in the five upper rows of Table 1.

The second hypothesis was that the two effects of Recompense would be uncorrelated with the six Kohlbergian stage effects because Recompense is not included in Kohlberg´s concept of justice. This prediction was well supported. The 12 correlations between the two Recompense differences and the six Kohlbergian differences are presented in the two lower rows of Table 1. These correlations are near zero and smaller than those among the Kohlbergian differences (i.e., $r=0.16$ in average, ranging from $r=0.04$ to $r=0.27$, the majority of them being not statistically significant after Bonferroni correction).

The correlations were analyzed using principal component analysis. The results are entailed in the two orthogonal structures of the varimax rotated loadings shown in Table 2. Note that these two near simple structures of loadings were obtained by orthogonal instead of oblique rotation.

Table 2: Varimax rotated loadings for the German children and for the Korean children

		German		Korean	
	Factor	I	II	I	II
	Variable				
Training	Societal Risk	0.335	- 0.012	0.685	0.220
Phase	Wife's Approval	0.589	0.327	0.719	0.034
	Personal Risk	0.430	0.181	0.772	-0.011
	Intent of Recompense	0.19	0.762	0.322	0.755
Combined	Intent of Recompense	- 0.151	0.846	0.022	0.910
Presentation	Societal Risk	0.494	- 0.225	0.592	0.151
	Wife's Approval	0.735	0.150	0.591	0.234
	Personal Risk	0.389	- 0.062	0.665	0.263
Percent of total variance explained		20.51	18.90	35.36	19.94

Table 2 shows two distinct factors for both groups: A Kohlbergian factor and an Intent of Recompense factor. The Kohlbergian factor in both columns I of Table 2 is characterized by relatively high loadings on all three kinds of Kohlbergian stage information (Societal Risk; Wife's Approval;

and Personal Risk) for both phases of stimulus presentation (training and combined). Thus, in contrast to a strict stage sequence the three Kohlbergian justice principles are not independent, but affect the punishment judgments in a highly correlated way.

The second factor is a Recompense factor, which is entirely distinct from the Kohlberg factor. Exactly the opposite pattern of loadings appears for the Intent of Recompense factor, as can be seen in both columns II of Table 2. High loadings for the Recompense information were found together with low loadings of the Kohlbergian information, indicating independence of the Recompense differences from the Kohlbergian differences. Thus, the moral principle of recompense appeared as a moral informer separate from the Kohlbergian stage informers. This implies that recompense is uniquely different from Kohlbergian moral content, thereby confirming similar findings for older subjects (Hommers, 1997).

This result was not totally independent from the cultural background of the subjects. For example, the fact that the solution for the Korean children accounted for a higher percentage of the variance (bottom of Table 2) indicated that the eigenvalues did not show the same decline in both subgroups (for German children: 1.85, 1.31, 1.10, 1.02, 0.94, etc., and for the Korean children: 3.25, 1.18, 0.85, 0.80, 0.61, etc.). Nevertheless the results of the presented factor analysis of the German children was meaningful and suggested that the three Kohlbergian stage informers appeared to be closely associated and separated from the moral informer Recompense.

DISCUSSION

In sum, the results demonstrated that the simple novel task of the thought scenario is a useful approach for studying moral information integration as it allows to include Kohlbergian and non-Kohlbergian moral concepts. It appeared sensitive enough for the study of developmental trends, cultural variations and individual differences and achieved consistent results. This led to new views about a moral algebra including Kohlbergian and other important moral informers.

Moral Algebra. The results confirmed that concepts of the Kohlbergian stage theory can be unified with the theory of information integration. This main result was shown by the integration of two Kohlbergian moral informers and by the integration of another Kohlbergian moral informer with the moral informer of recompense. Therefore, the integration of the various considerations, what is claimed to be the main contribution of stage theories (Rest 1983, p. 561), can be achieved by

information integration. The unifying direct approach of the present study produced a profound answer to the question of integration.

Twofold support for an additive integration of moral informers emerged. Although graphically not perfect, for the integration of both Kohlbergian moral informers related to stage 1 and stage 2/3, additive integration was graphically and statistically present when the Kohlbergian stage-4-informer was integrated with recompense. This cross-stimuli support for an additive integration was found with groups differing in age and cultural background. Furthermore, no influence of the subjects´ harshness on the data patterns was found. Thus, the conclusion may be warranted that within and beyond Kohlbergian content an additive moral algebra may become operative with sufficient capacities of the subjects. The present support is in line with evidence for an additive moral algebra in other integration tasks (see Anderson, 1991).

Kohlberg´s hypothesis of a universal moral development was confirmed with respect to the additive integration. Yet, it was shown that the Kohlbergian stage-4-concept of Societal Risk was operative in the moral algebra much earlier than found in interview research. Universality was supported in that no changes of that scheme appeared as functions of age or cultural background between fourth and sixth grade. More supportive cultural similarities were that among the Kohlbergian contents the Societal Risk informer had the largest effect in both groups of sixth graders, that Intent of Recompense had the largest effect in all age groups among all four moral informers, and that a cultural invariance was found in the factor analyses. However, age effects were observed in the increasing impact of Societal Risk and in a culturally dependent impact of Intent of Recompense, increasing in Korean children but decreasing in German children.

Recompense as a unique moral category. The results confirmed that recompense is a major moral category in which is effective early in life. Moreover, it is universally operative as there were no cultural differences found in second graders. Even the youngest children of both cultures could very well respond to recompense. This result links up with previous results by Hommers & Anderson (1985) where recompense affected moral judgments even in preschoolers.

The present results on recompense, however, revealed that recompense is unique from Kohlbergian moral content. First, the correlations and the factor analyses showed that recompense is a distinct moral category as this non-Kohlbergian moral informer formed a separate factor. This result confirms findings by Hommers (1997) for older subjects. Second, in contrast to recompense, the youngest children of the present study had difficulties to respond to Kohlbergian preconventional moral

informers in the integration task. Therefore, recompense cannot be simply subsumed as another preconventional Kohlbergian moral informer.

Usefullness of the personal thoughts task. The simple novel task of presenting thoughts of a harmdoer has several advantages. First, methodological problems of Kohlberg´s task are avoided. The simple rating judgment needs no extensive training as compared to the lengthy and individually administered verbal protocol of the Moral Judgement Interview (Colby, Kohlberg, Speicher, Hewer, Candee, Gibbs, & Power 1987). Therefore, the thought scenario avoids the objections of Rest (1986), Modgil & Modgil (1986), and Rest et al. (1999, chapter 2), which state among others that the standard protocol method confounds moral stage with verbal ability. Thus, a verbally less demanding response, along with experimental control of the stimulus situation serve to increase validity. Moreover, the novel task avoids mistakes due to the subjectivity of the person who scores the verbal protocols by a scoring manual (Colby et al., 1987) and avoids any implicit assumption of the interpretative stage diagnosis from verbal protocols.

Second, this approach can be employed with elementary school children. Kohlberg's approach misses a major period of moral development which takes place at preschool and elementary school ages. Even Rest´s recognition approach was explicitly restricted to subjects with a reading level of twelve years.

Third, for the same reason, the new approach can readily be used cross-culturally, as is done in the present study. Note that cross-cultural invarance as found here is the major criterion for the validity of the stage sequence. Therefore, cultural comparisons within the effects of the information related to the Kohlbergian stages are of key importance.

Fourth, quantitative responses were obtained instead of categorical data about stages. Consequently, methods other than frequency distributions can be applied which allow for more sensitive analyses and more profound tests of theoretical claims. As demonstrated by inclusion of experimental design the analyses of individual differences and of functional dependencies led to new findings. As shown this can easily be done with Kohlbergian and non-Kohlbergian concepts like with the moral concept of recompense. Additionally, non-moral concepts can be used in a similar way to check for the moral nature of the responses to the moral concepts in the personal task.

Fifth, the natural laws of moral integration can be studied, which may not be possible in Kohlberg´s theory. Although moral judgments depend on multiple determinants and on the integrated action of moral informers and although the importance of integrating multiple determinants was recognized when fairness was equated with "balancing or weighing of

conflicting claims" (Colby et al., 1983, p. 7), no empirical research has been done within stage theory.

Sixth, as frequently mentioned, Kohlberg´s approach misses everyday morality. Instead the simple task simulated the interrogation of a judge who is interested in the motives of the culprit and who might simply ask, "what did you think when you were violating the law?" By putting the subjects into the judge´s place they can reveal their moral capacities.

Finally, this report illustrates a method to unify the Kohlbergian approach to moral reasoning with moral content. Kohlberg rigorously sought to eliminate content, in order to get pure reasoning. But, moral content is essential in moral thinking. As Shweder (1982, p. 424) says, task content is decisive for how you think. Evaluative thinking is necessarily about content and Kohlberg relates to it by his notion of "balancing or weighing of conflicting claims". Of course, this study is limited in two ways, first, by the particular choice of stimuli to represent Kohlberg´s stages; and second, by its use of only one of Kohlberg´s dilemmas. Therefore, further studies are needed to reach any definite conclusion about how the moral reasoning process is related to content.

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